Old Road New Tricks to Solve Congestion, Bicycle, Pedestrian, Bike Lanes

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2010 Partnering Conference
August 11, 2010

LOUISVILLE 1778 JEFFERSON COUNTY

Why Accommodate Alternative Modes of Transportation?

- Reduce Roadway Congestion
- Increase safety for all users
- Environmental/Energy
- Economic Benefits
- Health Benefits
- Quality of Life Benefits

- 2001 National Household Travel Study
  - Over 60% of all personal trips are 5 miles or less
  - 40% are 2 miles are less (10 minute bike ride)
    - http://www.fhwa.dot.gov/policy/ohpi/nhts/index.cfm

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Why Accommodate Alternative Modes of Transportation?

- 25 % of walking trips take place on roads without sidewalks or shoulders
- 95% of roadways do not have bike facilities
  - National Survey of Ped & Bicyclist Attitudes & Behaviors, 2003 BTS

- 151 jurisdictions across the US have adopted or in the process of adopting a Complete Streets policies

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Why Accommodate Alternative Modes of Transportation?

- **Louisville Metro Complete Streets Ordinance**
  - Adopted February 2008
- **"Bicycle and pedestrian ways shall be established in new construction projects unless one or more of three conditions are met:**
  - Bicyclists and pedestrians are prohibited by law from using the roadway.
  - The Cost of establishing bikeways or walkways would be excessively disproportionate to the need or probable use.
  - Where the street has severe topographic or natural resource constraints.

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Federal Highway Policy

- Intermodal Surface Transportation Act of 1991
  - Posed a major change to transportation planning and policy

- February 2000, USDOT issued the *Design Guidance, Accommodating Bicycle and Pedestrian Travel: A Recommended Approach*, as required by TEA-21.

www.pedbikeimages.org/AustinBrown

- http://www.fhwa.dot.gov/environment/bikeped/bpdgl.htm

"Bicycling and walking facilities will be incorporated into all transportation projects unless exceptional circumstances exist."

KYTC Bike/Pedestrian Law

- Adopted in 1994
- A bicycle shall be operated in the same manner as a motor vehicle except the following traffic conditions shall apply:
  - A bicycle may be operated on the shoulder of a highway;
  - If a highway lane is marked for the exclusive use of bicycles, the operator of a bicycle shall use the lane whenever feasible;
  - Not more than two (2) bicycles shall be operated abreast in a single highway lane.

- (601 KAR 14:020, Section 9)
- http://www.planning.kytc.ky.gov/bike_walk/files/601_KAR.pdf

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KYTC Bike/Pedestrian Policy

- Adopted 2002

- The Kentucky Transportation Cabinet (KYTC) will ***consider*** the ***accommodation*** of bicycles and pedestrians on all new or reconstructed state-maintained roadways.

- KYTC will also consider accommodating bicycle and pedestrian transportation when planning the resurfacing of roadways, including shoulders and during construction and maintenance activities.

www.pedbikeimages.org/DanBurden

http://www.planning.kytc.ky.gov/bike_walk/files/Task%20Force%20FINAL%20June%2018_02%20policy%20rec%20to%20Sec%20Codell.PDF

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Lane Configuration Guide to Support Safe Bicycling and Vehicular Travel

http://bikewalk.ky.gov/files/KYTC%20Maintenance%20Restriping%20Guide.pdf

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Division of Planning
February 2010

Striping Guide

- Quick guide for pavement resurfacing.
- Gives engineers a new way to look at existing facilities.
- Supports Complete Streets concept
  - Provides safe, compatible traffic conditions for automobiles and bicycles.
- Each project is unique –choose the appropriate cross section.

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Striping Guide

- The needs of cyclists can be accommodated by retrofitting bike lanes onto many existing roadways using the following methods:

    1. Marking and signing existing shoulders as bike lanes;

    2. Physically widening the roadway to add bike lanes; or

    3. Restriping the existing roadway to add bike lanes
        - reducing or reallocate the width used by travel lanes
        - reduce the number of travel lanes,
        - reconfigure or reduce on-street parking)

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Striping Guide

- Recommended width of bike five (with curb and gutter):
  - 5 feet
- Adjacent to parking lane:
  - 6 feet
- High bicycle use:
  - 6 feet (allows bikes to pass)
- High Speed (>45mph) and high-volume roadways:
  - 6 feet
- Roadways with no curb and gutter:
  - 4 feet (minimum)

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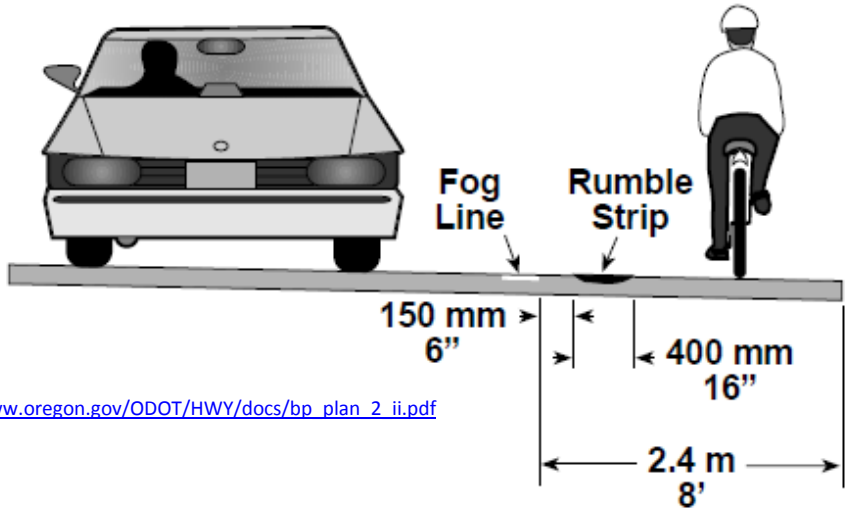
Striping Guide

- Special consideration of cyclists should be given when considering whether to incorporate **rumble strips** on a project.



www.oregon.gov/ODOT/HWY/docs/bp_plan_2_ii.pdf

- “Unless specified in the plans or directed by the Engineer, do not construct rumble strips on facilities with posted speed limits of 45 MPH or less.” (403.03.08)
  - http://transportation.ky.gov/construction/spec/2008/2008%20Division%20400%20with%20highlighted%20edits.pdf
- Speed limits 45 mph or higher, the context should be considered on whether rumble strips are truly justified to improve safety.

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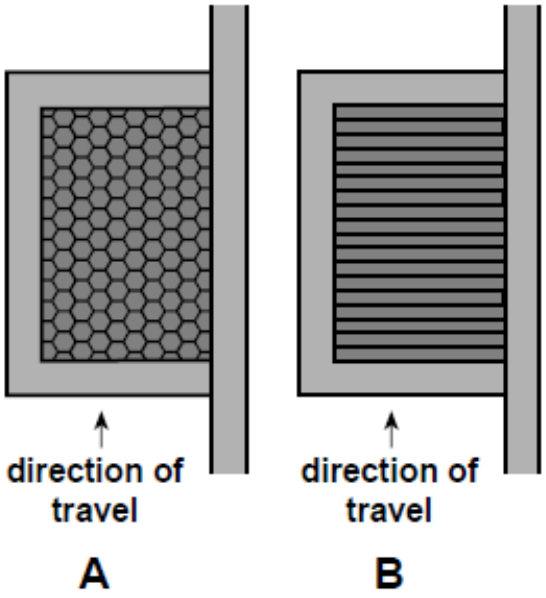
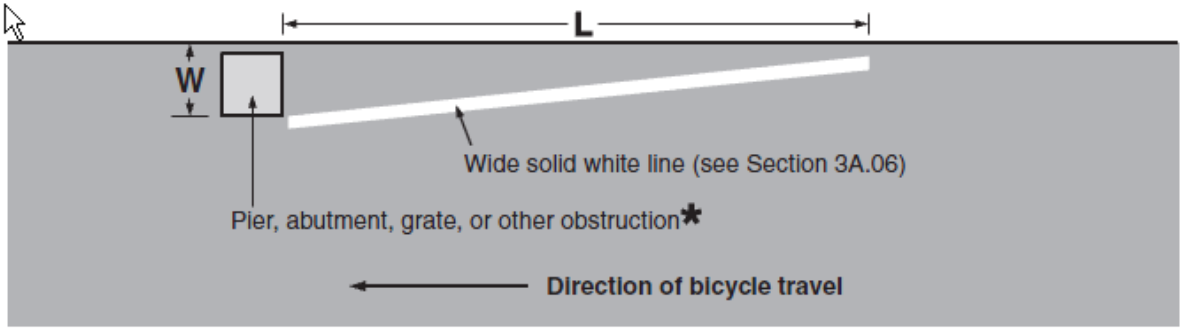
Striping Guide

- **<u>Curb drainage inlets</u>** should include bicycle-safe grates where the openings are either diagonal or traverse to the direction of travel.





B - Obstruction at edge of path or roadway

L = WS, where W is the offset in feet and S is bicycle approach speed in mph

* Provide an additional foot of offset for a raised obstruction and use the formula L = (W+1) S for the taper length

Striping Guide

- Minor widening may be considered on roadways without curbs to achieve safe lane configurations.

- High-speed roadways (urban and rural), it is recommended that paved shoulders be 6’ or wider to safely accommodate bicyclists.

(Citation Boulevard, Lexington)

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AASHTO Design Guide

- 4 feet: minimum width of bike lane on roadways with no curb and gutter
- 6 feet: minimum width of bike lane when adjacent to parking, from the face of the curb or guardrail
- 13 feet: recommended width of a shared bike lane and parking area (parking lane line or stall markings are not utilized)

- http://www.sccrtc.org/bikes/AASHTO_1999_BikeBook.pdf

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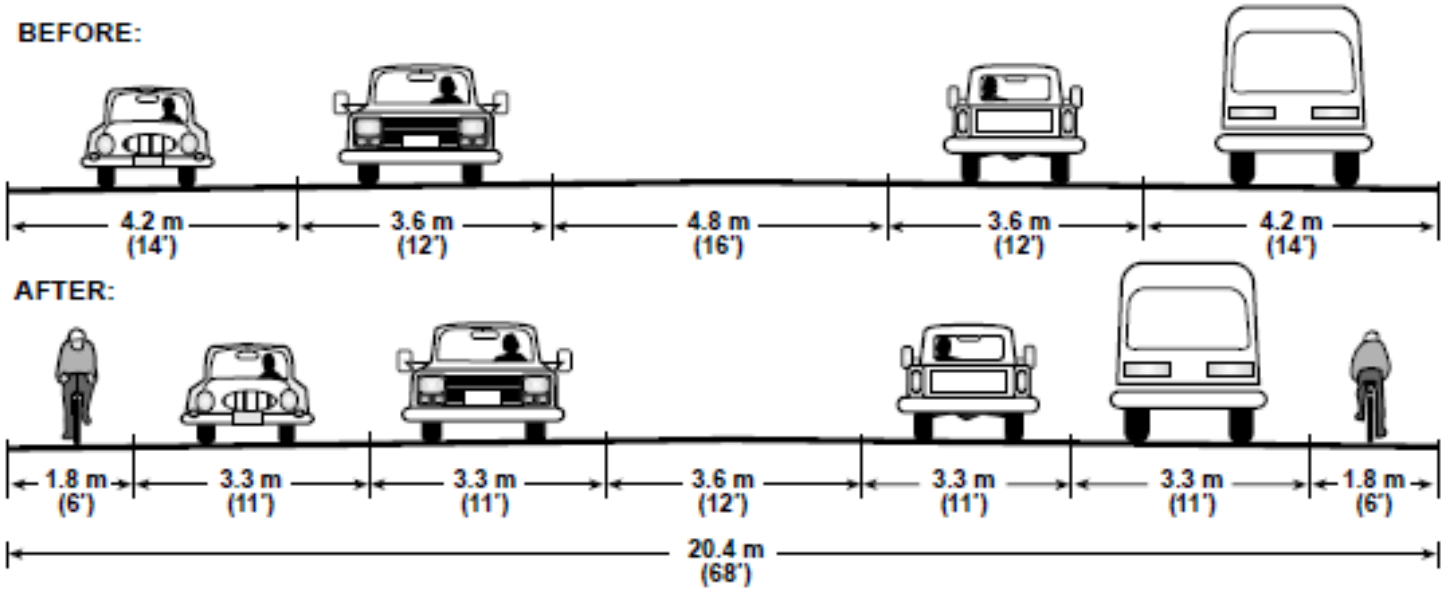
Safety

- Research has shown that there are no negative safety effects and minimal capacity effects by using 10-foot travel lane, especially on roadways with speeds equal or less than 35 mph.
  - http://www.sccrtc.org/bikes/AASHTO 1999 BikeBook.pdf

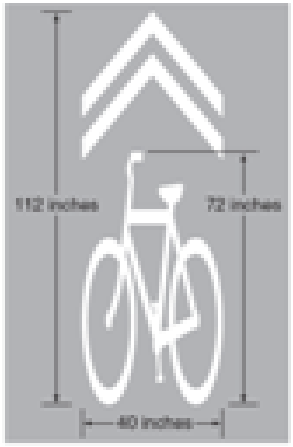


Road Diet = Bike Lanes

(Euclid Avenue, Lexington)

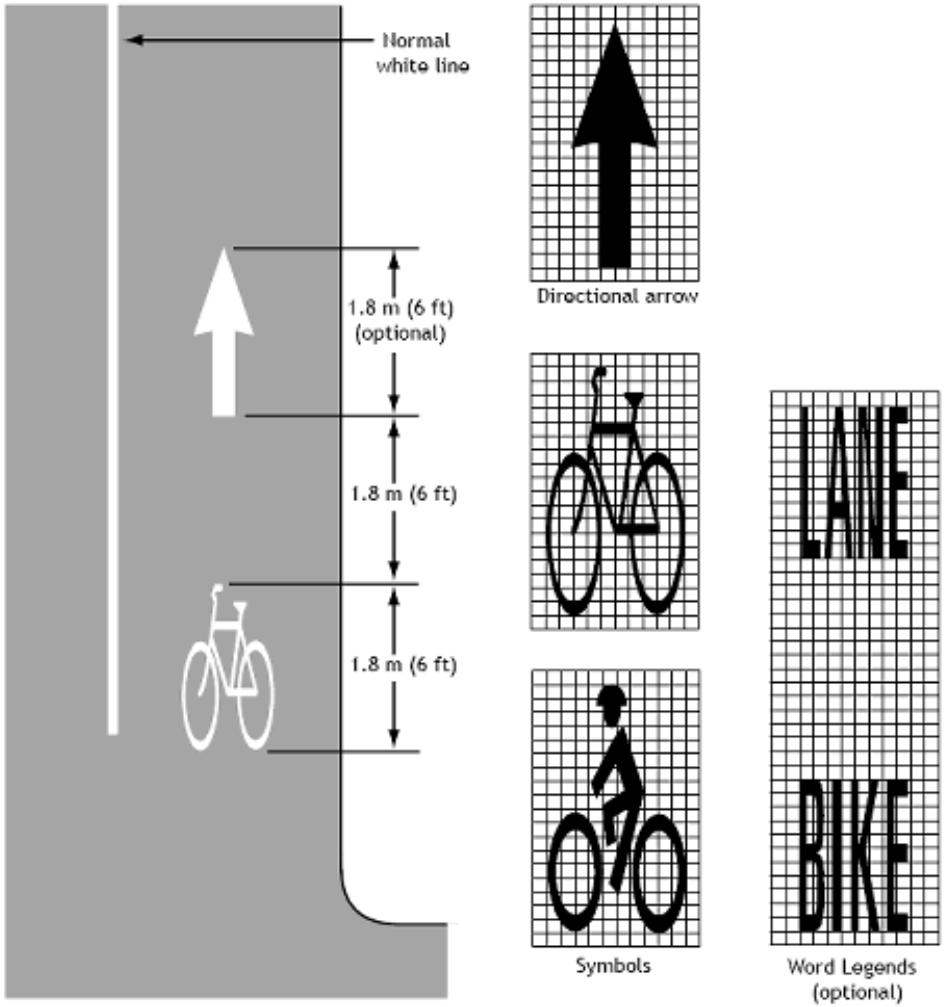
Signing and Striping

- MUTCD, Part 9 Traffic Control for Bicycle Facilities
  - http://mutcd.fhwa.dot.gov/pdfs/2009/pdf_index.htm

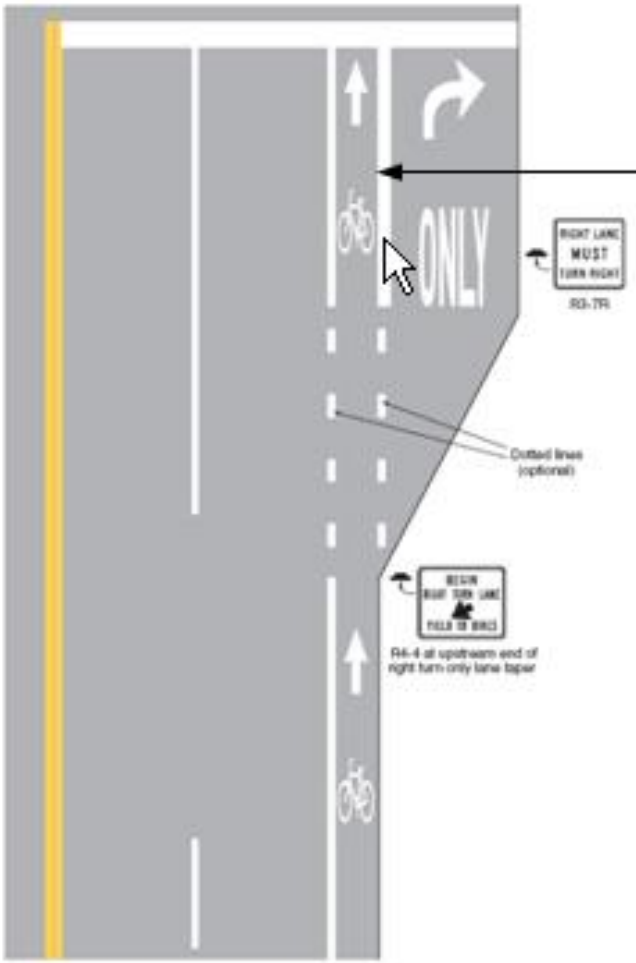


- Bike Lanes should be marked and signed to show:
  - start and stop of lane,
  - periodic intervals along route,
  - parking restrictions

Taylorsville Road, Louisville, KY



Bicycle Lane with Right Turn Lane



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Striped Bike Lanes

KY 1303 – Turkey Foot Road, Kenton County
OKI Regional Council of Governments

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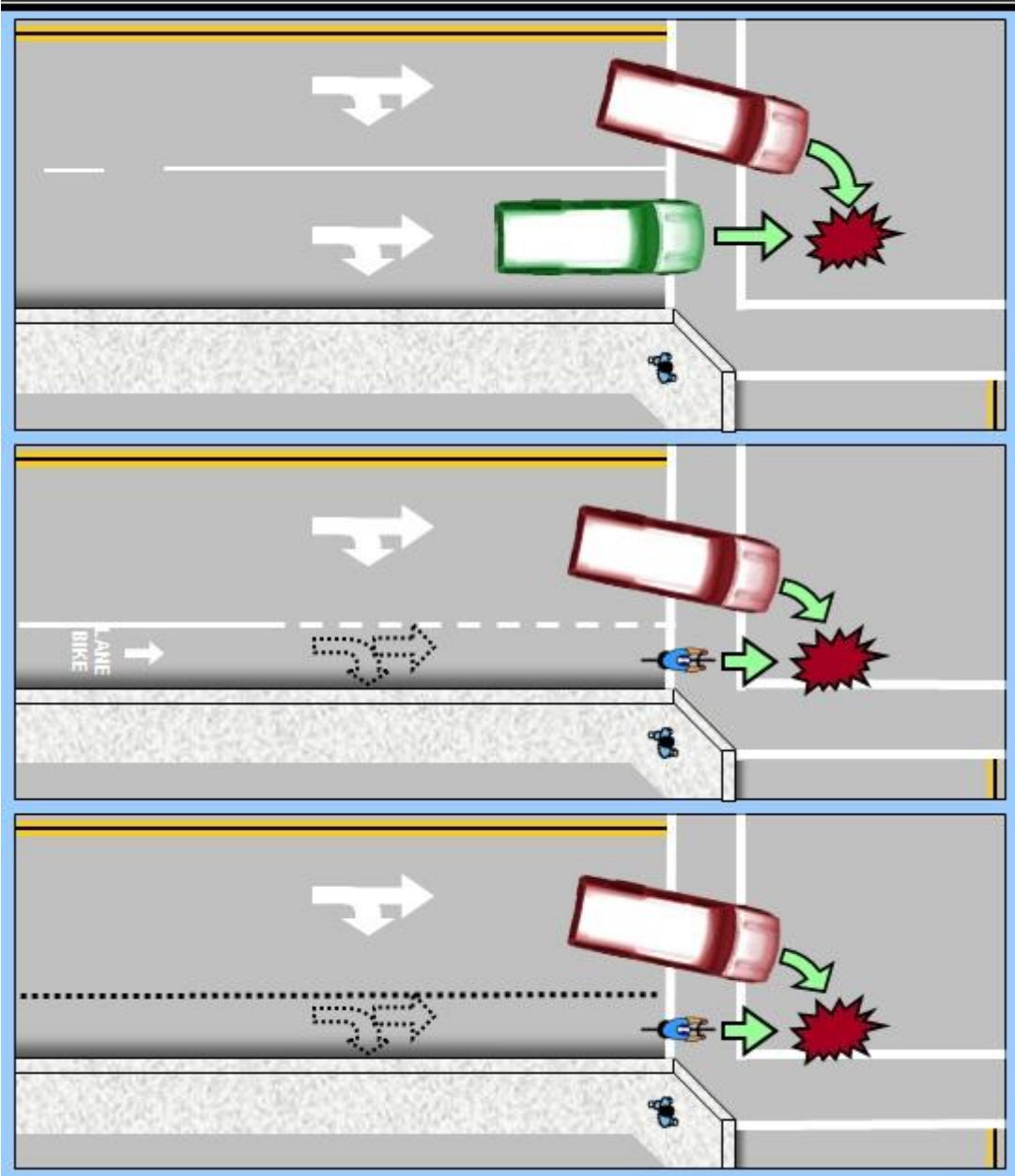
Ohio · Kentucky · Indiana
Regional Council of Governments

5 Incompatible Destination Lanes



Engineers will never design through/right lanes to the right of other through/right lanes, because this design is known to cause conflicts and car crashes.

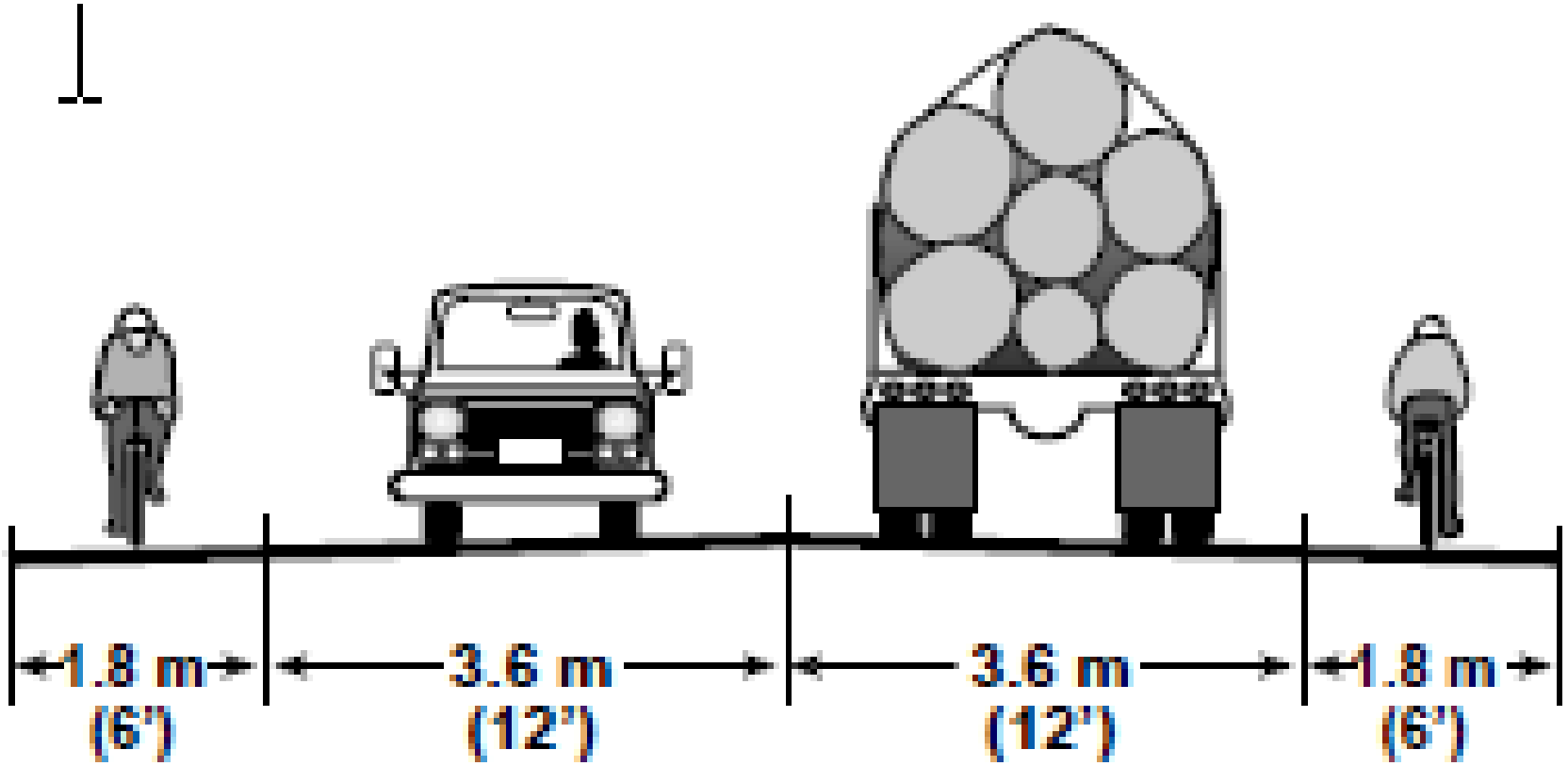
Yet through/right bike lanes are placed to the right of another through/right lane causing car-bike conflicts & crashes!

Why do engineers do this?

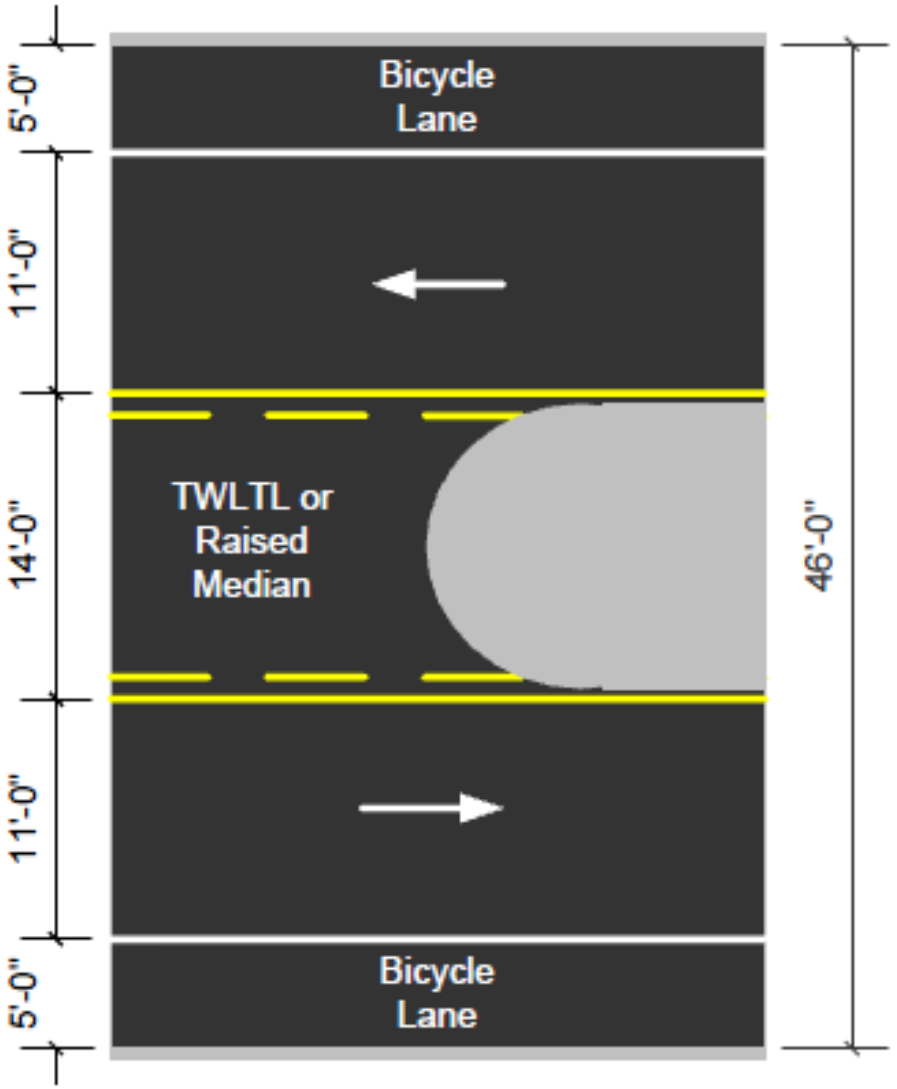
Riding far to the right creates a virtual through/right lane to the right of a through/right lane causing conflicts & crashes!

Why do laws encourage this?

36’ Rural Cross Sections
Shared Lanes



46’ Cross Sections



Curb and Gutter
Bicycle Lanes
No Parking

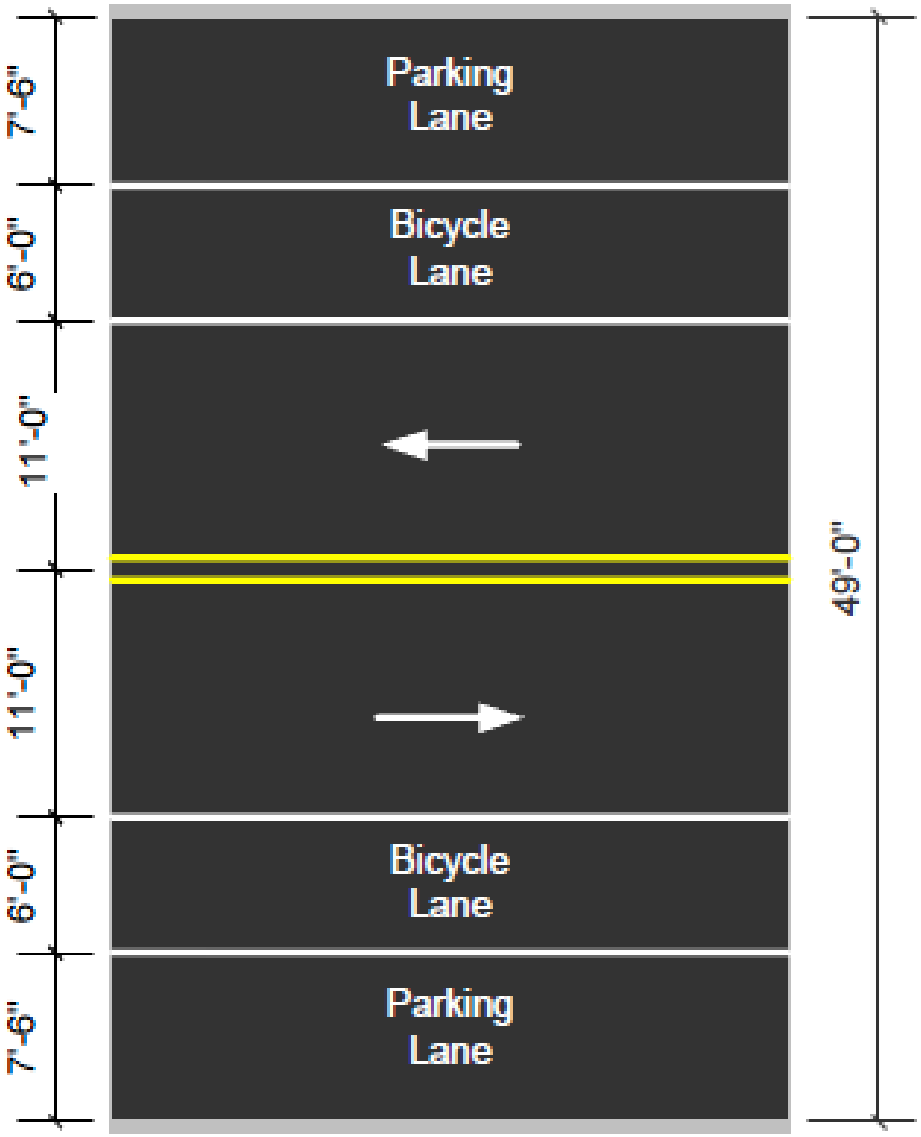
Optional Configurations

Total = Bicycle Lane* + Travel Lane** + Median Width + Travel Lane** + Bicycle Lane*

46' = 5.5' + 11' + 13' + 11' + 5.5'
46' = 6' + 11' + 12' + 11' + 6'

* Bicycle lane may include up to 2' gutter pan.
** Travel lane width next to median may include a gutter pan.

45’-53’ Cross Sections



* Parking lane may include up to 2' gutter pan.

Curb and Gutter
Bicycle Lanes
Parking on both sides

Total = Parking Lane* + Bicycle Lane + Travel Lane + Travel Lane + Bicycle Lane + Parking Lane*

45' = 7' + 5.5' + 10' + 10' + 5.5' + 7'
46' = 7' + 6' + 10' + 10' + 6' + 7'
47' = 7' + 6' + 10.5' + 10.5' + 6' + 7'
48' = 7' + 6' + 11' + 11' + 6' + 7'
49' = 7.5' + 6' + 11' + 11' + 6' + 7.5'
50' = 7.5' + 6' + 11.5' + 11.5' + 6' + 7.5'
51' = 7.5' + 6' + 12' + 12' + 6' + 7.5'
52' = 8' + 6' + 12' + 12' + 6' + 8'
53' = 8' + 6' + 12.5' + 12.5' + 6' + 8'

Isn't it Expensive?

- "By fully considering the needs of all non-motorized travelers (pedestrians, bicyclists, and persons with disabilities) early in the life of a project, the costs associated with including facilities for these travelers are minimized."
  - Jeff Morales, former Director, CalTrans

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For More Information:

- Kentucky Highway Design Manual
  - Chapter 15
- Kentucky Highway Lane Configuration Guide to Safe Bicycling and Vehicular Travel
  - Urban pedestrian facilities
  - Rural pedestrian facilities
  - Bicycle facilities
- http://bikewalk.ky.gov/

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